

FURTHER DISTRIBUTION OF *BUTOMUS UMBELLATUS* IN THE GREAT LAKES REGION

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WITH the finding of the European plant, *Butomus umbellatus* L., in the eastern end of Lake Erie during the past summer, it seemed worth while to review the further spread of this plant in and adjoining the Great Lakes system since 1941. Core¹ then published an account summarizing its first observations in Canada as recorded by Marie-Victorin², and in United States as given by Knowlton³ and listing specimens of subsequent collections in eastern America to that date. As shown in his map, the plant had already established itself rather well along the St. Lawrence River up to Montreal. In the numerous botanical contributions from the University of Montreal, it has been commonly included as one of the plants of the riverflats. Going inland along that waterway, the plant was reported only from the western end of Lake Erie around Toledo and the Erie Islands (where, according to Core, it was seen first at Little Cedar Point, Ohio) as far north as the River Rouge in Wayne County, Michigan.

Since the writer first found *Butomus umbellatus* L. on the eastern side of Lake St. Clair at the end of Concession 7, Dover East Township, Kent County, in 1938, she has been interested in its further extension. Just when the plant arrived there is not exactly known. I have heard several accounts, as of arrival after the flood of 1929, and introduction by seed purchased from Toledo. Since there are no specimens to show that it was along the shoreline prior to 1930, when Farwell obtained it in Wayne County, Michigan, it seems unjustifiable to base conclusions on verbal evidence only. The note on the sheet of the Farwell specimen, No. 8742, of this date (G) states "In 1918 it covered acres of land in River Rouge that have since been filled in" and at least gives record of an early stand near by. The president⁴

¹ Core, "*Butomus umbellatus* in America."—Ohio Jour. Sci. 41: 79–85, 1941.

² Marie-Victorin, Flore Laurentienne, 618 (footnote), 1935.

³ Knowlton, "*Butomus umbellatus* at Lake Champlain". RHODORA 32: 18, 19, 1930.

⁴ Mr. C. H. Zavitz, of the Dept. of Lands and Forests, in Chatham has written: "Dr. Bell has his original notes and correspondence with Dr. John Dearness who made the determination. The original discovery was made July 21, 1934 (near Mitchell's Bay). Further plants were located on July 23, 1934, in a near-by drainage ditch". Other members of the original party had been W. Anderson of Chatham and J. H. Smith (deceased) of Rondeau.

of the very active Kent Nature Club, with two members of the original party, Dr. C. C. Bell and Mr. C. H. Hand of Chatham, has confirmed the report that it was first found by them near Mitchell's Bay, Dover East Township, Kent County, Ontario, on July 21, 1934. In the interval since, the plant has been reported from several stations near by, as the specimens listed indicate. By Hewitt¹ in 1940, it was described as having established itself well in the muskrat marshes of Mr. B. F. Bradley at the mouth of the Thames River. It is noteworthy that it has really proved of usefulness to the muskrats in supplying material for their houses and it is undoubtedly due to their activities that this handsome plant has become so generally distributed in portions of that marsh area. Thus in addition to the natural advantages for the introduction of this plant from Europe to the great St. Lawrence waterway as described by Dr. Fernald², it seems actually to have active agents to aid in its further establishment.

Other specimens prove its successful establishment after introduction, as in New York State. Dr. W. C. Muenscher³ reports: "This species was introduced at the southern end of Cayuga Lake in 1930 by introducing a few rootstocks from Lake Champlain. From this locality *Butomus* has become well established and has spread to several localities in the marshes about the inlet to Cayuga Lake and also along the east shore of the Lake northward to a point about 3 miles from the original planting. It was also introduced in Isoetes Pond, in Cortland County, by introducing some seeds in 1940. By 1942 several plants producing flowers and seeds were present in the Pond. It has persisted and spread to a small extent since that time."

Likewise the more numerous specimens from along the Ottawa River and Rideau Canal region in Ontario, indicate its satisfactory establishment there. One introduction which seems curiously not to have succeeded is that of Demsey⁴ who brought it from La Prairie County, Quebec, and planted it in two places in the Dundas Marsh, Hamilton, where no one so far has reported seeing it.

¹ Hewitt, "A Study of the Ecology of an Artificial Fresh-water Marsh with Special Reference to Ducks and Muskrats". M.Sc. Thesis, Cornell University, 1941 (unpublished).

² Fernald, "The Problem of Conserving Rare Native Plants". Smithsonian Report: 375-391, 1939.

³ By private communication.

⁴ Demsey, *Canadian Field Nat.* 48: 145, 1935.

Almost coincidental with the publication of Core's¹ "Flora of the Erie Islands", noting the rapid spread of *Butomus* throughout the island group south of the international border, came the first recorded collection of it on the Canadian side at the eastern end of Lake Erie in Welland County, Ontario. Mr. Bert Miller² found about ten plants on Aug. 17, 1948, in the small creek that flows into the lake about 6 miles west of Port Colborne. In the Museum of Natural History, Buffalo, there are no specimens and to Mr. Zenkert's³ knowledge, there have been no reports of its having been observed previously at the eastern end of Lake Erie on the Canadian side. It has now been learned that it had been discovered on July 24 by Dr. Witz at the mouth of Elk Creek, Erie Co., Pennsylvania, and that it has grown there in abundance for the past few years, spreading to the bay side at the eastern tip of the Presque Isle peninsula by 1946.

By subsequent inquiry it was learned from A. W. Stokes⁴, of the Pelee Island Pheasant Demonstration Project, that "a stand of perhaps 30 plants growing within a circle of a radius of 5 yards" was found there this past autumn and one specimen was sent to the Franz Theodore Stone Laboratory at Put-in-Bay. He writes: "It grows about 5 yards back of the high water mark in a low-lying field that remains wet most of the year, although by September the ground was quite firm".

As had been noted by Core, l. c., a sterile deep-water form with long leaves, *B. umbellatus* forma *vallisneriifolius* (Sagorski) Glück, had also been collected in various places. That this sterile form has survived is seen in a further specimen of it from New Haven, Conn., in Turtle Brook and marginal marshy area near airport, *J. J. Neale*, Sept. 5, 1943 (G, N). Also its survival has been noted at Put-in-Bay by Professor J. Verduin³ as follows: "The early location for these islands (Alligator Bar) has been under about two feet of water for the past five years and there is a stand of submerged *Butomus* in that area which is sterile and has the characteristics described for the forma *vallisneriifolius*".

Though *Butomus umbellatus* L. is not known to have been seen in Lake Ontario as yet, it seems probable that we may look for-

¹ Core, The Flora of the Erie Islands, Franz Theodore Stone Laboratory, Ohio State University. Contribution 9, 1948.

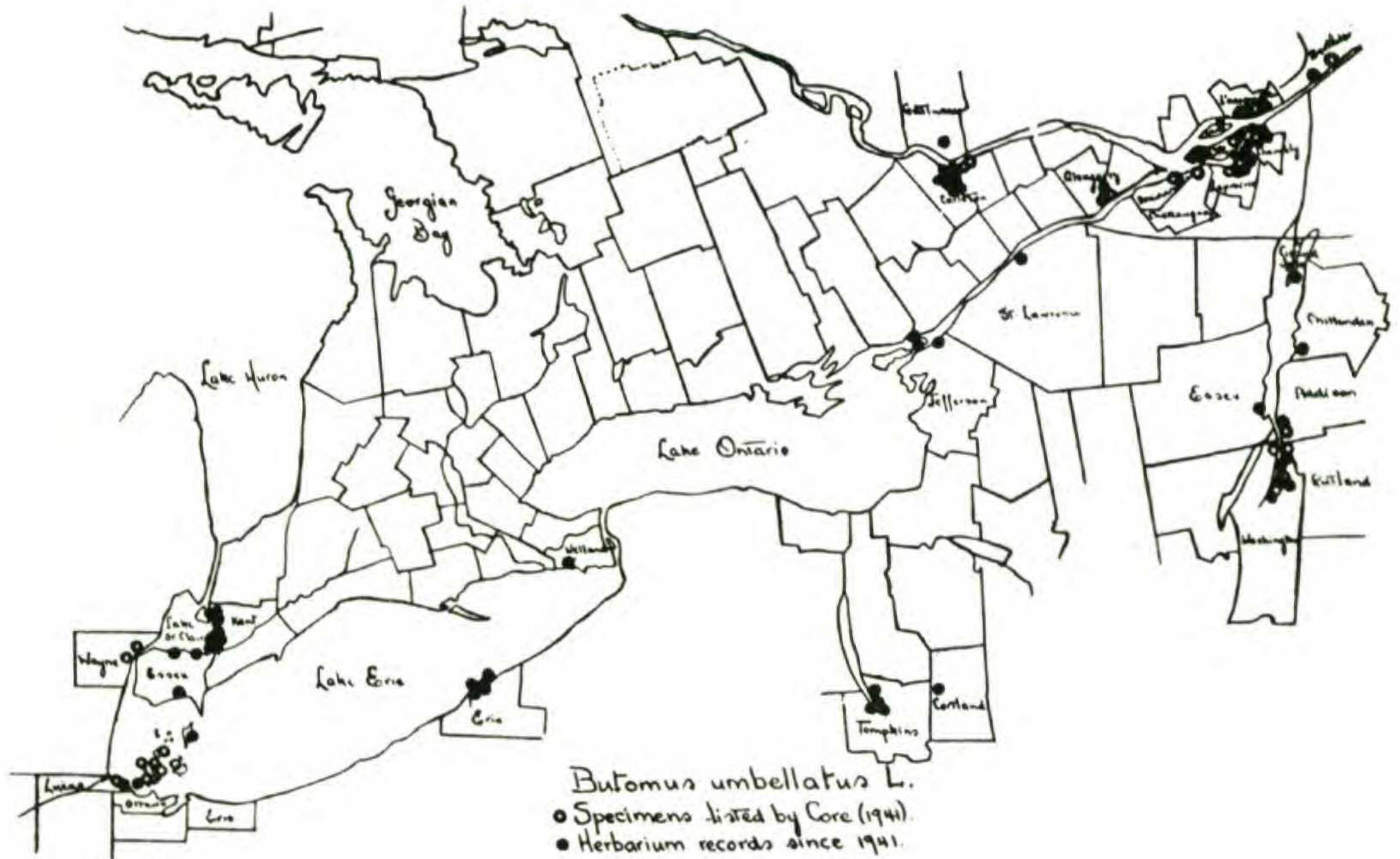
² Aided by a grant from the Research Council of Ontario.

³ By private communication. Dec. 30, 1948.

⁴ By private communication. Dec. 11, 1948.

ward to its general establishment about our Great Lakes basin at least to the beginning of Lake Huron.

To the curators of various herbaria¹ who have contributed information or specimens we express appreciation. The additional reports since 1941 have been compiled and the additional range shown by the map.



QUEBEC. BERTHIER CO.: Lanoraie, shores of the St. Lawrence River, Aug. 5, 1923, *H. K. Svenson, N. C. Fassett* 1054, (G). L'ASSOMPTION CO.: St. Sulpice, muddy shore of the St. Lawrence River, Aug. 3, 1923, *C. H. Knowlton* (G); St. Lawrence River, St. Sulpice, Aug. 29, 1935, *B. Boivin* (Ot); river flats along the n. shore of the St. Lawrence River, between Repentigny and St. Sulpice, Aug. 23, 1947, *J. H. Soper, D. A. Frazer* (T). CHAMBLY CO.: Longueuil, July, 1906, *Frère Marie-Victorin* (Ot); Sept. 1915, *Victorin* 1046 (G); Sept. 12, 1931, (PeU); Longueuil, abondant sur les grèves du St. Laurent, Sept. 25, 1925, *Victorin* 20414, (G); Longueuil, entre l'île Verte et le rivage, *Victorin* 45, 696, (T). LAVAL CO.: Academie St. Joseph, Montreal, Aug. 22, 1921, *Frère Edmond* (Ot); near river, Montreal, Aug., 1926, *Wm. Rhoades* (C). LAPRAIRIE CO.: Laprairie,

¹ In citing specimens from various herbaria, the following abbreviations will be used: C—Cornell University; Ch—Dominion Entomological Laboratory, Chatham, Ont; F.T.S.—Franz Theodore Stone Laboratory of the Ohio State University, Put-in-Bay; G—Gray Herbarium; Gu—Ontario Agricultural College, Guelph; M—McMaster University, Hamilton; N—New England Botanical Club at the Gray Herbarium; O—National Museum, Ottawa; Ot—Dominion Experimental Farm, Ottawa; OS—Ohio State University, Columbus; P—Carnegie Museum, Pittsburgh, Pa; A. S.—A. G. Shields, Penn. State College Behrend Centre; Pe U—University of Pennsylvania; T—University of Toronto; W—University of Western Ontario, London, Ontario.

shores of the St. Lawrence River, Aug. 4, 1923, *H. K. Svenson & N. C. Fassett* 1053, (G, G without number); Laprairie, shallow water, Sept. 17, 1941, *A. S. Pease* 29364, (G, PeU without number); river marshes, St. Lawrence River, s. of St. Lambert, near Montreal, Aug. 22, 1924, *K. M. and M. C. Wiegand* (C); La Tortue, Sept. 19, 1926, *Victorin* 24709, (G); Quai de la Tortue, July 19, 1940, *C. Marcoux* (Ot). GATINEAU CO.: Cascades Point, Aug. 28, 1930, *L. J. Milne* 85.1, (T). ONTARIO. GLENGARRY CO.: South Lancaster, 1 mi. s. of Lancaster on No. 2 Hwy., very near Lake Ontario, July 31, 1941, *H. Groh* 1550, (Ot); Raisin River, near the boundary of Quebec on the route Montreal-Toronto, *Victorin* 46, 741, (T). CARLETON CO.: Rideau Canal, Ottawa, July 23, 1912, *J. W. Eastham* (Ot); swampy lagoon, West Bank St. Canal, Ottawa, July 1, 1912, *W. H. Harrington* (O); Ottawa, July 6, 1915, *F. Fyles* (Ot); Rideau Canal, Ottawa, June 6, 1933, *E. G. Anderson, W. H. Minshall* (Ot); Brown's Inlet (off Rideau Canal), Ottawa, Aug. 12, 1941, *E. G. Anderson* 535 (Ot); along Rideau Canal, s. end of Arboretum, Central Experimental Farm, Ottawa, July 9, 1942, *M. N. Zinck* 1209, (Ot); Hurdman's Bridge, along edge of Rideau River, Ottawa, July 20, 1943, *W. G. Dore* (Ot); swamp s. w. of Ottawa, *O. S. Brenat* (Gu); dead fruit collected in Rideau Canal system, Nov. 15, 1948, *O. Hewitt* (M). WELLAND CO.: in small creek, 1 mi. w. of Burnaby, 6 mis. w. of Port Colborne, Aug. 17, 1948, *B. Miller* (M). KENT CO.: Mitchell's Bay, Aug. 13, 1934, *A. A. Wood, J. Dearness* (W), *A. A. Wood* (Ch, T), Sept. 12, 1934, *G. M. Stirrett* (Ch), Aug. 13, 1943, *H. F. Hudson* (Ch); shoreline of Lake St. Clair, St. Luke's Bay, end of concession 7, Dover East Tp., Aug. 26, 1938, *L. O. Gaiser* 75, (Ot, M); Bradley's Muskrat Farm, mouth of Thames River, June 22, 1940, *Hewitt* (M); 1 mi. n. e. of mouth of Thames River, at Lake St. Clair, Aug. 10, 1940, *J. H. Soper, Hewitt* 2334 (Ot, M, G); Bradley's Marsh, Dover West Tp., Sept. 2, 1943, *W. H. Minshall* 3415, (Ot); along e. side of shore road, Bradley's Marsh, mouth of Thames River, Dover West Tp., June 6, 1948, *L. O. Gaiser, R. Neal* (M). ESSEX CO.: Stoney Point, Sept. 12, 1934, *G. M. Stirrett* (Ch); drainage ditch of Lake St. Clair, Belle River, June 24, 1944, *W. G. Dore* 44-14, (Ot); drainage ditch into Lake Erie, Kingsville, June 26, 1944, *Dore* 44-20, (Ot); North Bay Marsh, Pelee Island, Sept. 25, 1948, *A. W. Stokes* (F. T. S). VERMONT. GRAND ISLE CO.: Grand Isle, swale by Lake Champlain, abundant, July 14, 1941, *C. H. Knowlton* (N). CHITTENDEN CO.: Charlotte, clayey strand of Lake Champlain, Aug. 27, 1942, *C. A. Weatherby* (N). ADDISON CO.: near Orwell, wet muddy shore of Lake Champlain, Sept. 1931, *C. Schweinfurth* (N). RUTLAND CO.: West Haven, Lake Champlain, Aug. 20, 1929, *W. C. Muenscher, W. E. Manning* and *B. Maguire* 207, (G); West Haven, shore of bay, Lake Champlain, Aug. 15, 1930, *H. L. Potter* (N). NEW YORK. ESSEX CO.: Montcalm's Landing, near Ticonderoga, July 18, 1939, *H. D. House* 26763 (G), (C, PeU without number). WASHINGTON CO.: edge of lake, Whitehall, Aug. 4, 1930, *F. Dobbin* 660, (G); 2 mis. s. of Whitehall, Lake Champlain, Aug. 20, 1934, *J. M. Fogg* (PeU); South Bay, Lake Champlain, Aug. 6, 1938, *W. C. Muenscher* and *O. L. Justice* 812, (G, T, PeU). ST. LAWRENCE CO.: in slough along St. Lawrence River, e. of Waddington, Aug. 22, 1947, *W. C. Muenscher, Babette I. Brown* 16325, (C). JEFFERSON CO.: growing on low muddy shore, Flynn's Bay, s. w. corner of Grindstone Island, St. Lawrence River, July 25, 1946, *A. Hotchkiss* (C); sand bar, one foot deep, McRay's Bay, n. w. region of

Grindstone Island, St Lawrence River, July 30, 1946, *Hotchkiss* (C); growing on a shallow muddy bar on the e. shore of Goose Bay, St. Lawrence River, Aug. 19, 1946, *Hotchkiss* (C). CORTLAND CO.: from seed introduced in Oct. 1940, Isoetes Pond, near McLean Bogs, Aug. 6, 1942, *W. C. Muenscher, D. Isely, Babette I. Brown* (C). TOMPKINS CO.: w. end of Stewart Park, shore of Cayuga Lake, Ithaca, June 25, 1936, *Muenscher* (C); on island in Cayuga Inlet, Floral Ave., Ithaca, Aug. 29, 1941, *Muenscher, W. T. Winne* (C); apparently from seed scattered by *Muenscher*, 1941, roadside ditch, Rt. 13, 1 mi. s. w. of Ithaca, July 25, 1942, *Isely* (C); e. shore of Cayuga Lake, $\frac{1}{2}$ mi. n. of Esty, Oct. 16, 1943, *Muenscher, Babette I. Brown* (C). PENNSYLVANIA. ERIE CO.: mouth of Elk Creek, several mis. w. of Erie, Pa., July 22, 1941, *Miss M. C. Wright* (P); July 11, 1946, *A. J. Shields* (A. S); near tip of Presque Isle Peninsula, Thompson Bay, 1946, *W. R. Witz* (P); Elk Creek, July 17, 1947, *R. Kelley* (C). OHIO. OTTAWA CO.: Hatchery Bay, South Bass Island, Aug. 20, 1936, *L. H. Tiffany* (O. S). LUCAS CO.: Little Cedar Point Marsh, Sept. 16, 1936, *J. J. Lynch* (O. S).

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POTENTILLA PROCUMBENS IN THE UNITED STATES.—The first arrival of a plant into the United States is always botanical news. It poses again the interesting problem of range-extensions and methods of dispersal, as well as the probability of adaptation to a new environment.

In the latter part of November of 1948 the writer collected *Potentilla procumbens* Sibth., as it has been known, near Lake Shehawken, Wayne County, Pennsylvania. It was so identified tentatively, and material was recently sent to the Gray Herbarium where Dr. Fernald confirmed the identification, but reported that in the new edition of Gray, now in preparation, the name will be changed to *P. anglica* Laisch. The Pennsylvania material, he reports, "is more dichotomously branching than in most plants".

He also reports that it is "indigenous on peaty or bushy slopes of southern Labrador, southeastern Newfoundland, and Cape Breton Island,—and occurs as an adventive in southeastern Nova Scotia".

In the Pennsylvania locality it is growing on a somewhat wet rocky slope over an area of about 30–40 feet in extent. It is abundant, growing with the usual pasture grasses, with *Juncus effusus* and the following adventives: *Ranunculus acris*, *Mentha spicata*, *M. piperita*, *Cirsium lanceolatum*, *C. arvense*, and *Hieracium aurantiacum*.